Delta Smelt Decision Tree: Quantifying “Concern”

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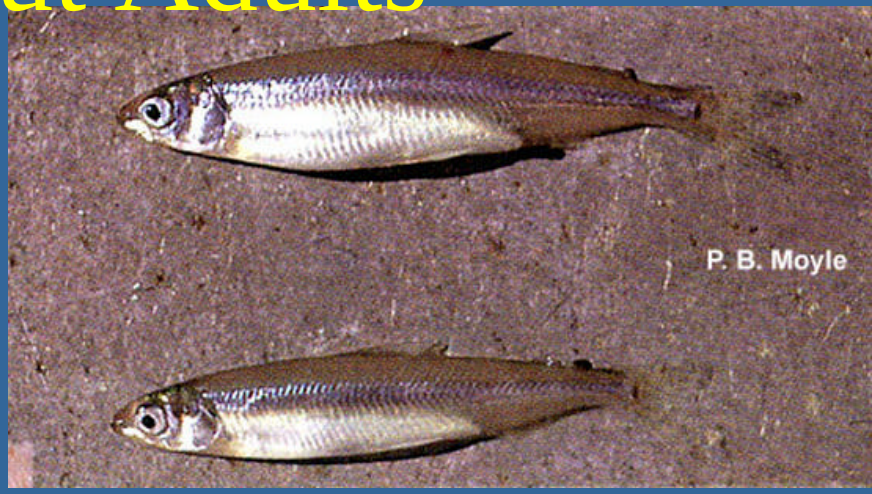
Concern about Adults

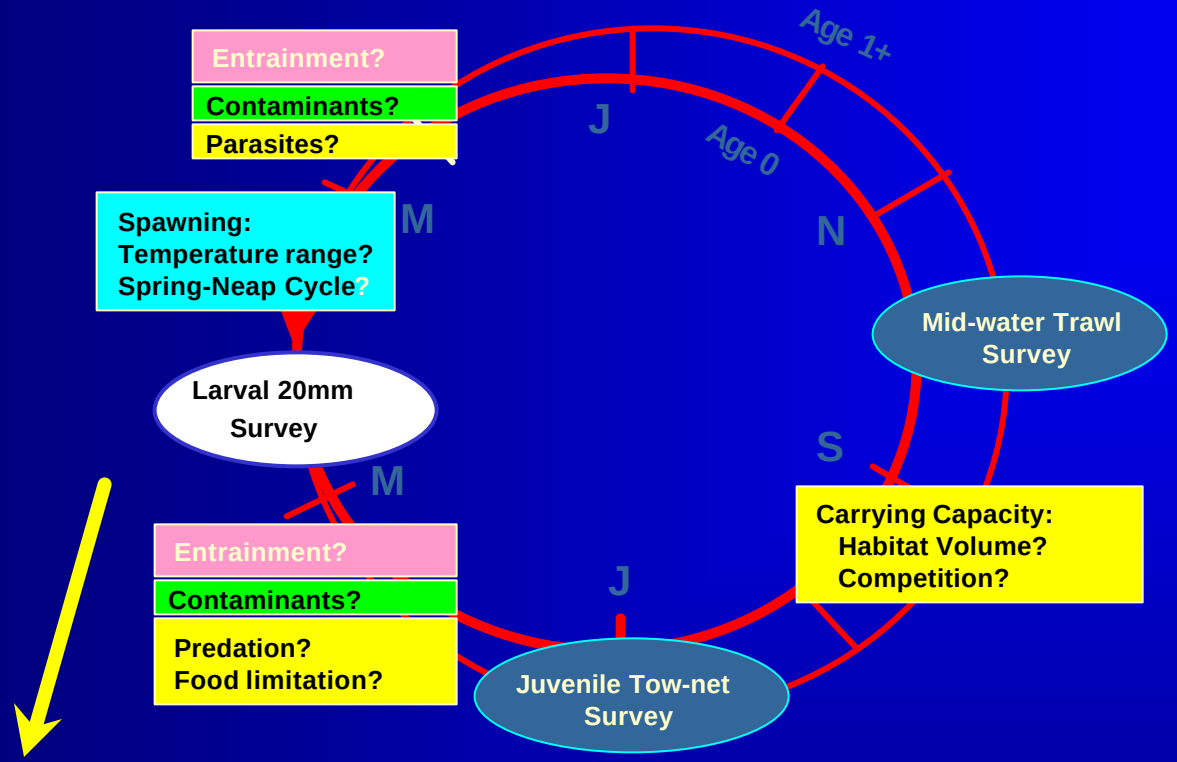


- Fluctuates
- 2 year olds
- Pre-spawning female adults
- Small adult population
- High salvage variability

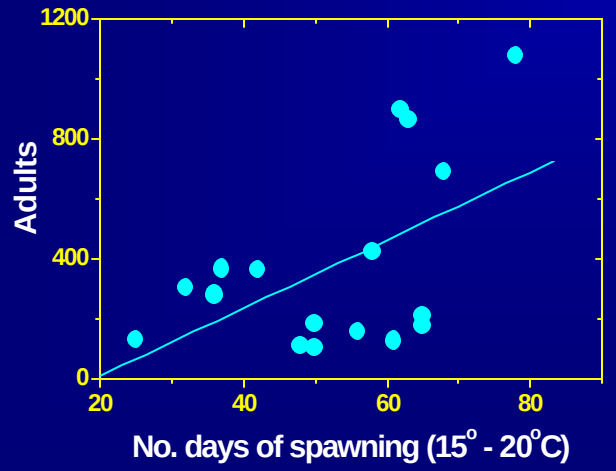
Uses

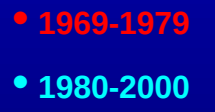
- Allow prediction of need
- Balance needs among species/life stages
- Scale need by level of concern
- Transparent logic of decisions
- Prioritize monitoring efforts
- Highlight research needs

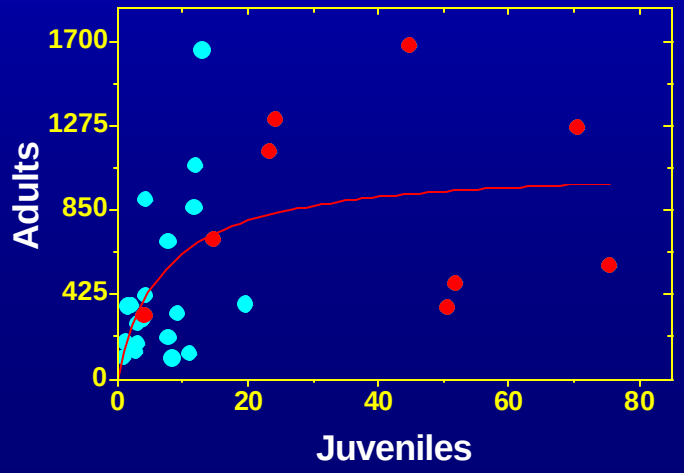
Conceptual Model for Delta Smelt: A Gauntlet of Effects



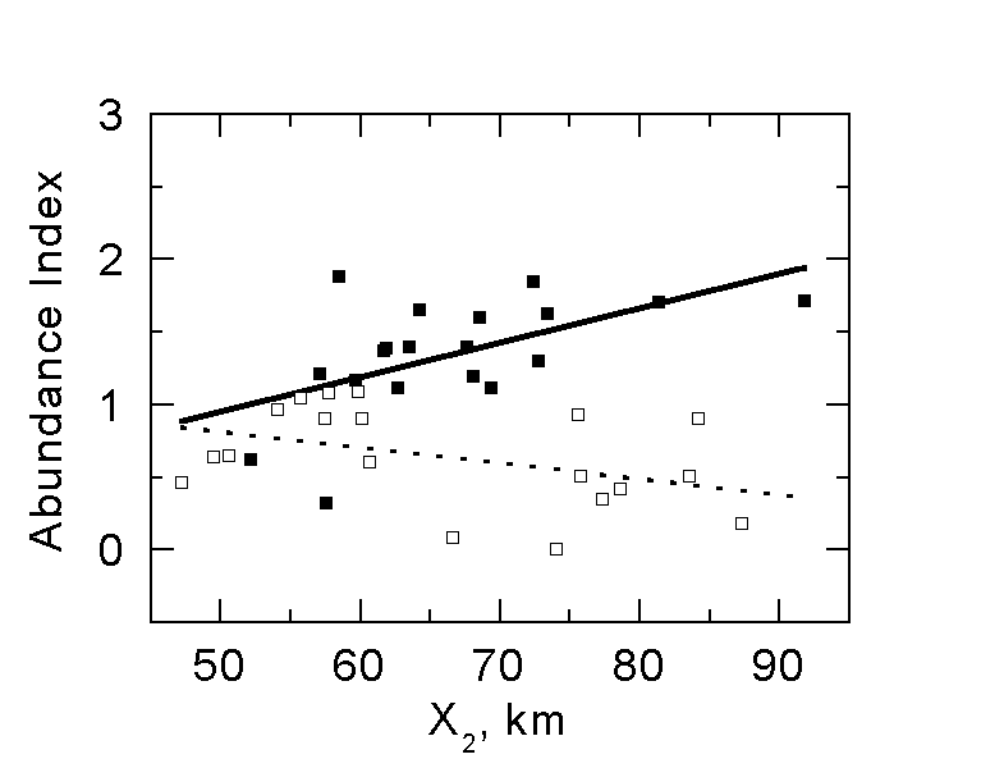
Thanks to Bill Bennett







Rearing Habitat
Better summertime abundance
(and growth?)

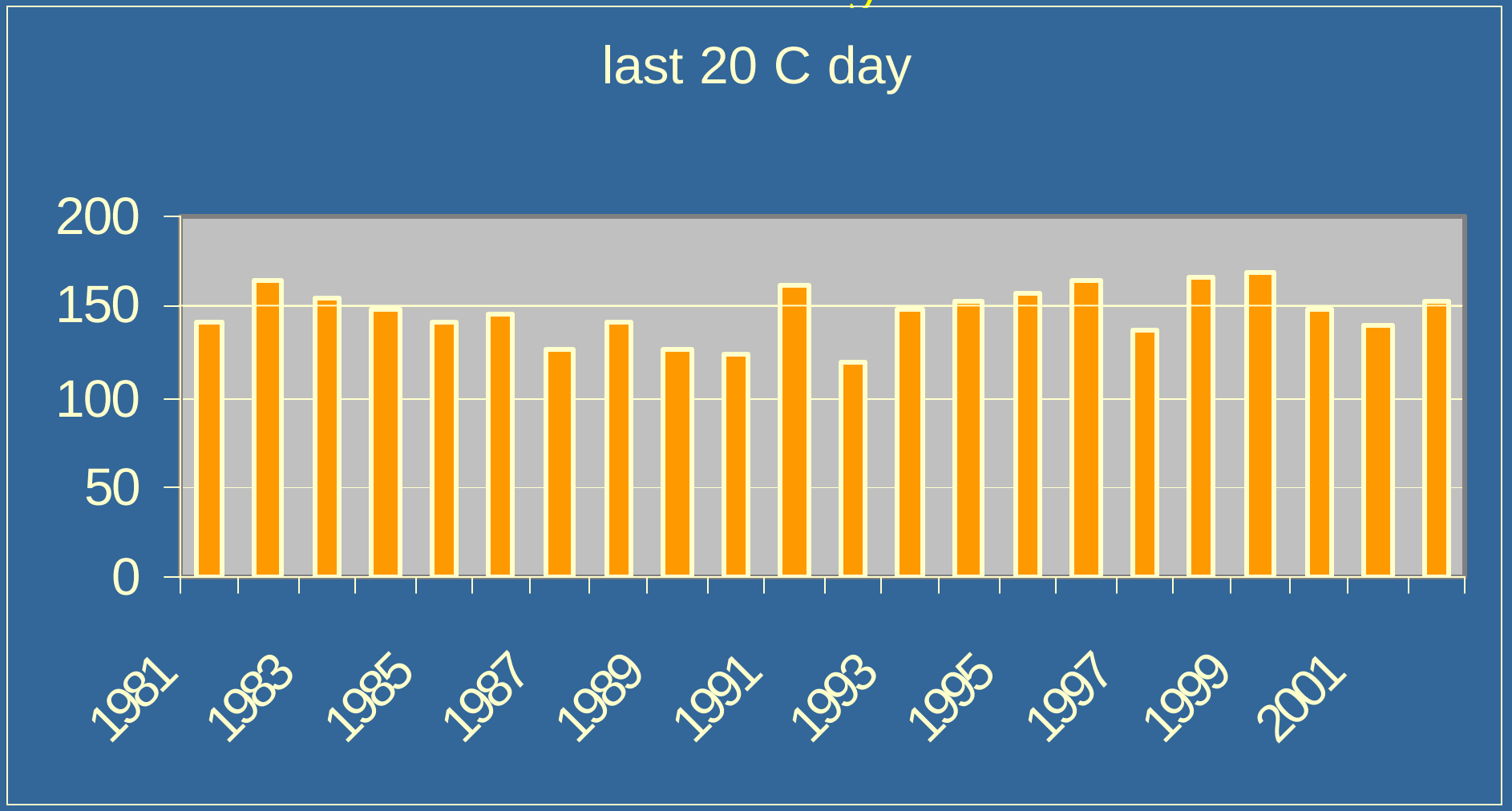


Thanks to Wim Kimmerer

Quantifying concern

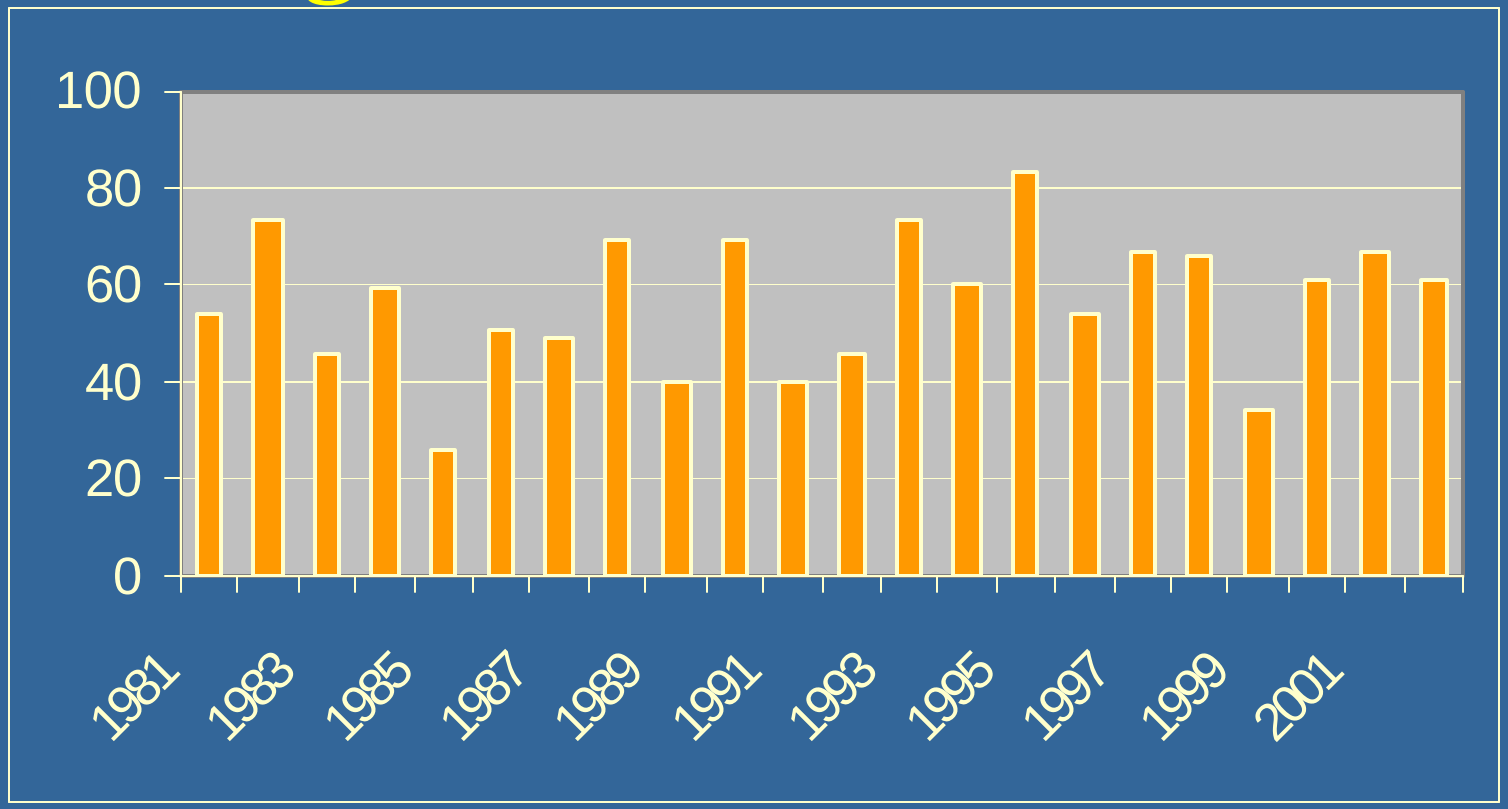
- Use
  - 2-year production
  - Last spawning date
  - Length of spawning
  - X2 conditions
  - Fall Midwater trawl
- Calculate quintiles of each
  - Max-B/(range/5)

Last 20 C Day
= chance of 2 year-olds



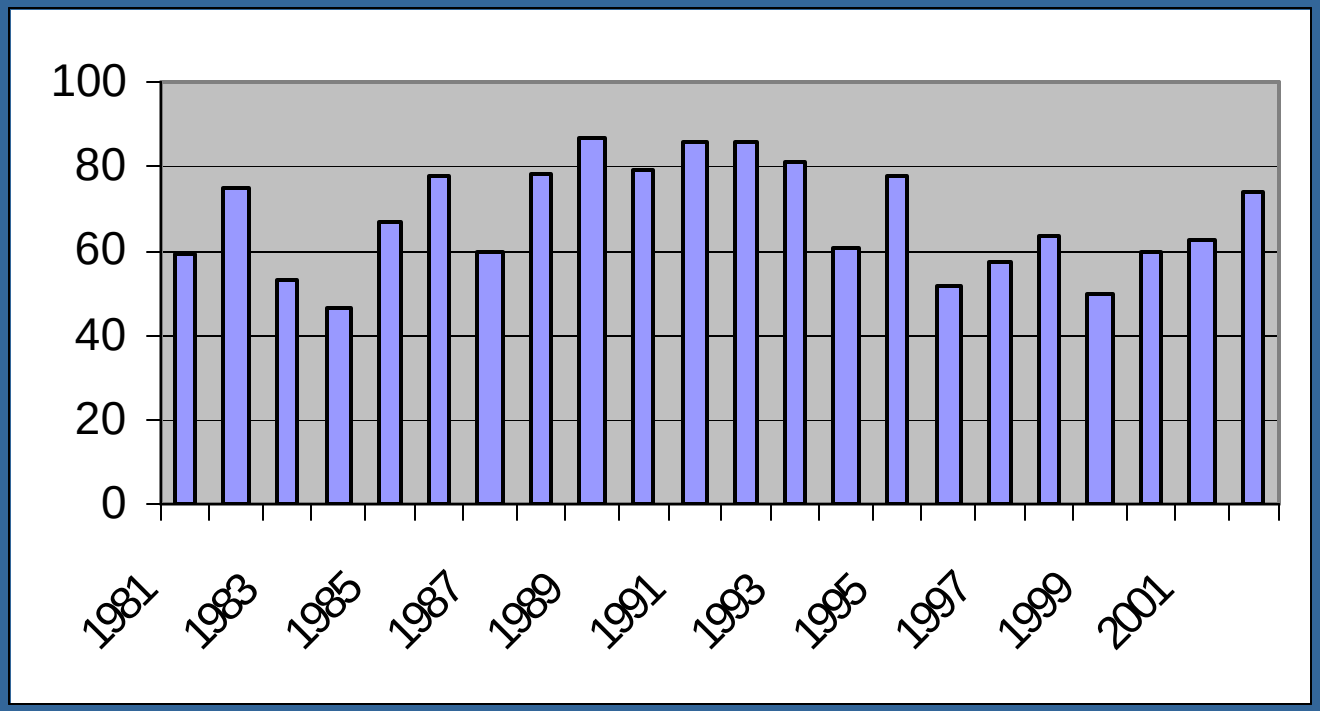
Concern= 5- (169-A)/10

Spawning window last year = higher number of cohorts



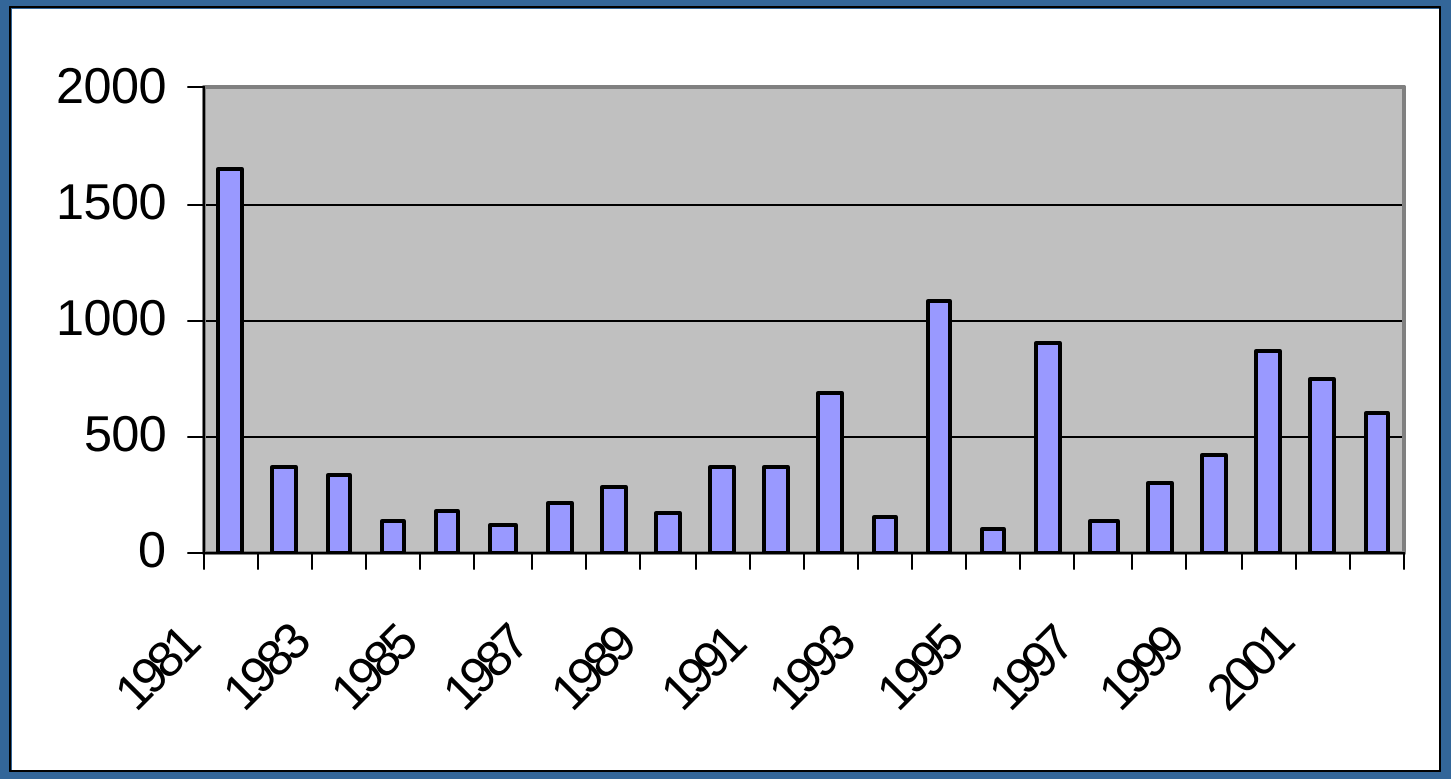
Concern= (83-B)/11

Springtime X2
= Rearing conditions



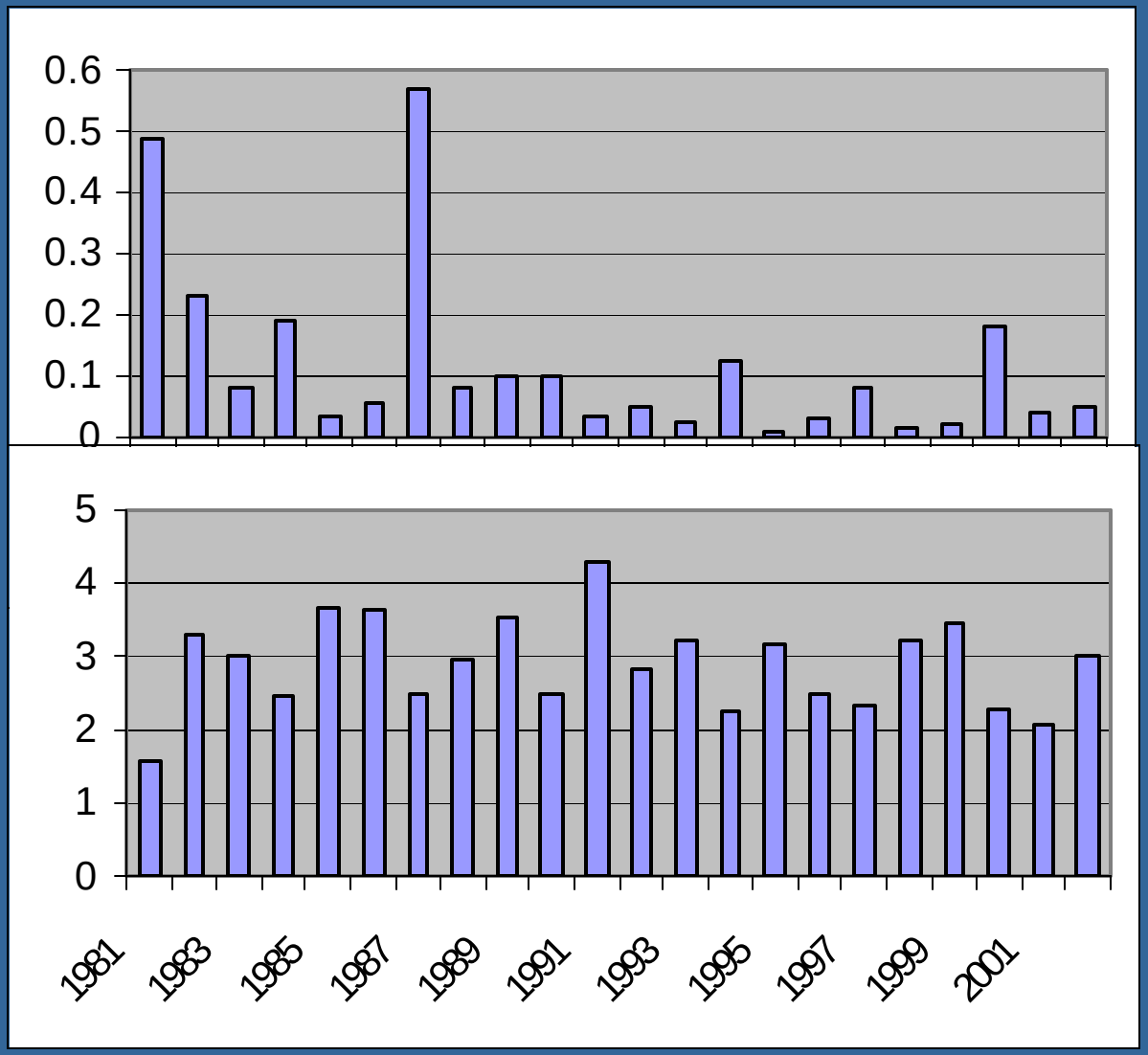
Concern= 5- (87-C)/8

Previous Fall MWT = adult population estimate

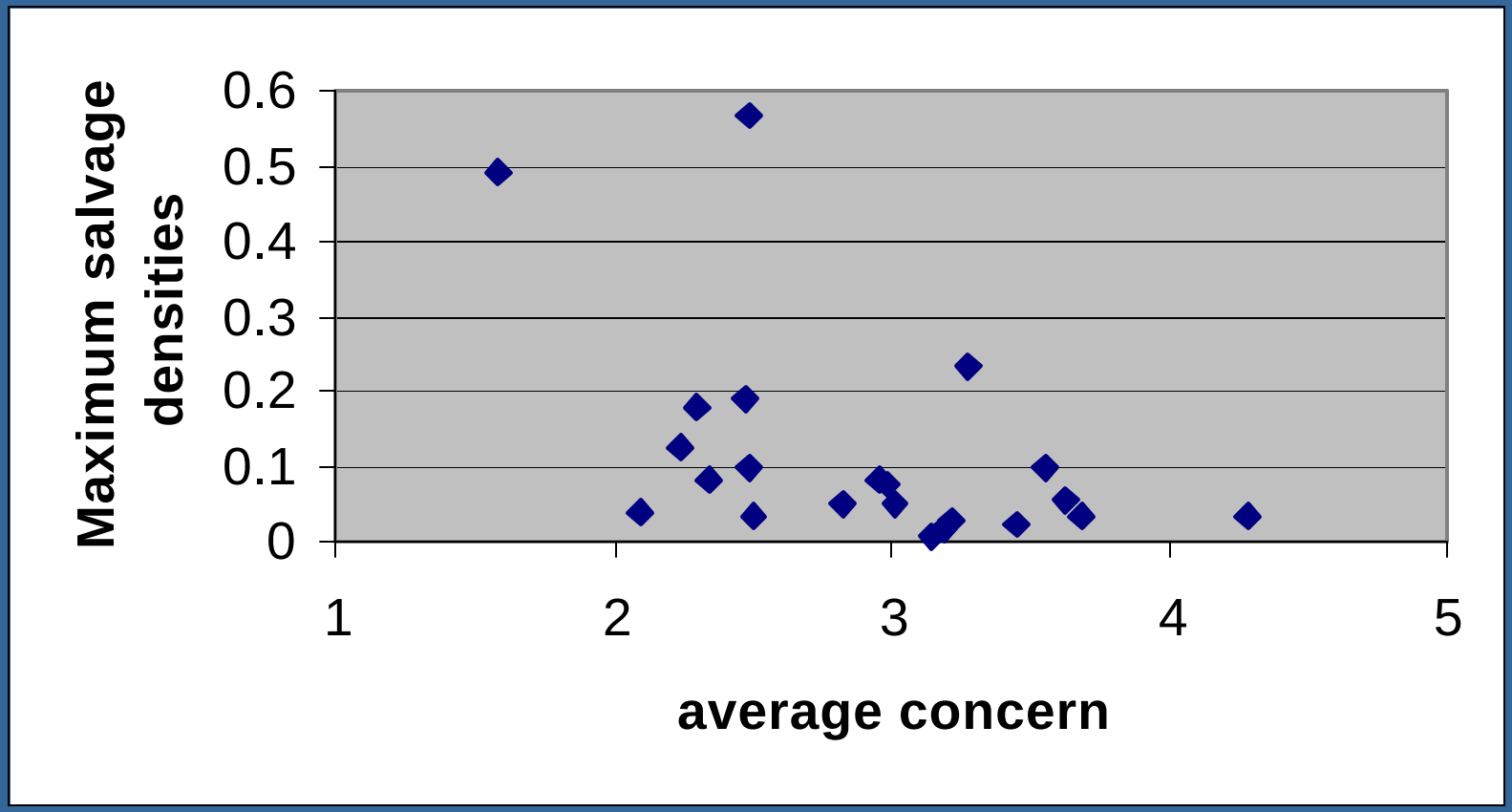


Concern= (1653-D)/310

Maximum Daily Salvage



Maximum daily salvage vs Concern



Predicting and triggering EWA use

- Last 20 C day in June – ~ 20 months
- Spawning window short– ~ 9 months later
- Springtime X2 –8 months later
- Low Fall MWT –2 months later
- High salvage of prespawning females
  - Trigger action based on level of concern
  - Scale action based on concern

Caveats

- Disagreement among biologists about importance of 2 year olds
- Salvage trigger weak
- Prefer to trigger based on distribution
- No effort to include juvenile concerns yet